

REMARKS

In the last Office Action, the Examiner objected to the specification and claims as containing informalities. Claims 1-15 and 17-20 were rejected under 35 U.S.C. §112, second paragraph, for indefiniteness. Independent claims 1, 2 and 17 were rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent No. 3-168618 to Kashiwagi et al. ("Kashiwagi"). The Examiner did not apply any prior art against any of the dependent claims.

In accordance with the present response, the specification has been revised only to correct informalities corresponding to the objections raised by the Examiner. Independent claims 1, 2 and 17 have been amended to incorporate the subject matter of dependent claims 4, 5 and 18, respectively. Claims 7, 10 and 8, 11 have been amended to depend on claims 1 and 2, respectively, in light of the foregoing amendment to claims 1-2. Claims 1-3, 7, 8, 10, 11, 13, 14, 17 and 20 have also been amended to overcome the claim objections and indefiniteness rejection raised by the Examiner. Claims 4-6, 9, 12, 15 and 18 have been canceled. A new abstract which more clearly reflects the invention to which the amended claims are directed has been substituted for the previously submitted abstract.

In view of the foregoing, applicant submits that the objections to the specification and claims and the rejection of the claims under 35 U.S.C. §112, second paragraph, have been overcome and should be withdrawn.

The amendments to the abstract and claims made herein do not raise new issues requiring further search and/or consideration. Instead, independent claims 1, 2, 17 have been amended to incorporate the subject matter of dependent claims 4, 5, 18, respectively, claims 7, 10 and 8, 11 have been amended to depend on claims 1 and 2, respectively, to conform to the foregoing amendment to claims 1-2, claims 1-3, 7, 8, 10, 11, 13, 14, 17, 20 have been amended to overcome the claim objections and indefiniteness rejection raised by the Examiner, claims 4-6, 9, 12, 15 and 18 have been canceled, and the previously submitted abstract has been replaced with a new abstract which more clearly reflects the invention to which the amended claims are directed, thereby placing the application in condition for allowance or otherwise materially reducing the issues which remain for appeal.

Applicant respectfully requests reconsideration of his application in light of the following discussion.

Brief Summary of the Invention

The present invention is directed to a portable information apparatus.

Conventional film liquid crystal devices have been used in electronic information apparatuses such as electronic timepieces. In the conventional film liquid crystal devices, a pair of flexible substrates are spaced apart to define a gap therebetween containing a liquid crystal material. A sealing portion (e.g., solder or adhesive) seals an injection port through which the liquid crystal is injected into the gap. However, when the film liquid crystal device is supported by mounting members in a curved state, the location of the sealing portion, which is hardly deformed as compared with the flexible substrates, prevents the film liquid crystal device from achieving a uniform bent state.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-6 show an embodiment of a portable information apparatus 100 according to the present invention embodied in the claims. The portable information apparatus 200 has a film liquid crystal device 2 having a pair of flexible substrates 32, 33 spaced apart from one another to define a gap therebetween containing liquid crystal. The film liquid crystal device 2 has first surface portions 12 having a curved cross-section, engagement portions 14 extending from respective ones of the first surface portions 12, at least one

second surface portion 11 having a planar cross-section, and an injection port formed in the at least one second surface portion 11 and through which the liquid crystal is injected into the gap. A sealing portion 31 is disposed on the at least one second surface portion 11 for sealing the injection port. A holding structure has a first holding member 4 and a second holding member 5 for holding the film liquid crystal device 2 in a curved state while the at least one second surface portion of the film liquid crystal device 2 remains planar in cross-section and while the first holding member 4 engages the engagement portions 14 of the liquid crystal device 2.

In another embodiment, the film liquid crystal device 2 has at least two second surface portions 11 each having a planar cross-section in the curved state of the film liquid crystal device 2, the sealing portion 31 being disposed on one of the at least two second surface portions 11. A connection terminal 15 is disposed on another of the at least two second surface portions 11 for electrically connecting the film liquid crystal device to a circuit block.

By the foregoing construction, the second surface portions of the film liquid crystal device remain planar in cross-section even when the film liquid crystal device is held by the holding structure in a curved state. As a result, since the sealing portion and the connection terminal are

disposed on respective ones of the planar surface portions of the film liquid crystal device, the sealing portion and the connection terminal do not impede or interfere with the curvature state of the film liquid crystal device as compared to the conventional art.

Traversal of Prior Art Rejections

Claims 1, 2 and 17 were rejected under 35 U.S.C. §102(b) as being anticipated by Kashiwagi. Applicant respectfully traverses these rejections and submits that amended claims 1, 2 and 17 recite subject matter which is not identically disclosed or described in Kashiwagi.

Amended independent claim 1 is directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define therebetween a gap containing liquid crystal, a plurality of first surface portions having a curved cross-section, a plurality of engagement portions extending from respective ones of the first surface portions, at least one second surface portion having a planar cross-section, an injection port formed in the at least one second surface portion and through which the liquid crystal is injected into the gap, and a sealing portion disposed on the at least one second surface portion for sealing the injection port. Amended claim 1 further requires a holding structure

having a first holding member and a second holding member for holding the film liquid crystal device in a curved state while the at least one second surface portion of the film liquid crystal device remains planar in cross-section and while the first holding member engages the engagement portions of the liquid crystal device.

Amended independent claim 2 is also directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define therebetween a gap containing liquid crystal, a plurality of first surface portions having a curved cross-section, a plurality of engagement portions extending from respective ones of the first surface portions, at least one second surface portion having a planar cross-section, an injection port formed in the at least one second surface portion and through which the liquid crystal is injected into the gap, and a connection terminal disposed on the at least one second surface portion for electrically connecting the film liquid crystal device to a circuit block. Amended claim 2 further requires a holding structure having a first holding member and a second holding member for holding the film liquid crystal device in a curved state while the at least one second surface portion of the film liquid crystal device remains planar in cross-section and while the first

holding member engages the engagement portions of the liquid crystal device.

Amended independent claim 17 is also directed to a portable information apparatus and requires a film liquid crystal device having a pair of flexible substrates spaced apart from one another to define therebetween a gap containing liquid crystal, a first surface portion having a planar cross-section, an injection port formed in the first surface portion and through which the liquid crystal is injected into the gap, a sealing portion disposed on the first surface portion for sealing the injection port, a second surface portion having a planar cross-section, and a connection terminal disposed on the second surface portion for electrically connecting the film liquid crystal device to a circuit block. Amended claim 17 further requires a holding structure for holding the film liquid crystal device in a curved state while the first and second surface portions of the film liquid crystal device are generally parallel with a curvature axis of the film liquid crystal device.

As set forth in detail below, Kashiwagi does not disclose or describe the structural combination of the portable information apparatus recited in each of amended independent claims 1, 2 and 17. In this regard, the Examiner's attention is respectfully invited to Ex parte Levy, 17 USPQ2d 1461, 1462 (BPAI 1990), wherein the Board stated:

The factual determination of anticipation requires the disclosure in a single reference of every element of the claimed invention. In re Spada, 15 USPQ2d 1655 (Fed. Cir. 1990); In re Bond, 15 USPQ2d 1566 (Fed. Cir. 1990) (other citations omitted). Moreover, it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference. Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).

As stated by the Court of Appeals for the Federal Circuit in the case of In re Spada, 15 USPQ2d 1655, 1657 (CAFC, 1990):

Rejection for anticipation or lack of novelty requires, as the first step in the inquiry, that all the elements of the claimed invention be described in a single reference. Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir.), cert. denied.

Similarly, as stated earlier by the Court of Customs and Patent Appeals in the case of In re Marshall, 198 USPQ 344, 346 (CCPA, 1978):

Rejections under 35 USC 102 are proper only when the claimed subject matter is identically disclosed or described in the prior art. In re Arkely, 59 CCPA 804, 807, 455 F.2d 586, 587, 172 USPQ 524, 526 (1972). In other words, to constitute an anticipation, all material elements recited in a claim must be found in one unit of prior art. Soundscriber Corp. v. United States, 360 F.2d 954, 960, 148 USPQ 298, 301 (Ct.cl. 1966).

Kashiwagi discloses a liquid crystal device having a curved liquid crystal panel (Figs. 1-7). A pair of substrates 1 are spaced-apart from one another to form a gap containing a liquid crystal 5. As shown in Figs. 6-7, each of the substrates 1 has curved surface portions (i.e., curved opposite main surfaces of substrates 1) and planar surface portion (i.e., planar side surfaces of substrates 1). A seal material 3 has an injection port and is disposed in the gap between inner main surfaces of the substrates 1.

However, Kashiwagi does not disclose or describe the specific structure of the film liquid crystal device recited in each of amended independent claims 1 and 2. More specifically, claims 1 and 2 require a plurality of first surface portions having a curved cross-section and a plurality of engagement portions extending from respective ones of the first surface portions. The curved surfaces (i.e., main surfaces) of the substrates 1 in Kashiwagi clearly do not have engagement portions.

Claims 1 and 2 further require at least one second surface portion having a planar cross-section, an injection port formed in the at least one second surface portion, and a sealing portion disposed on the at least one second surface portion. Stated otherwise, claims 1 and 2 require that the injection port is formed in and the sealing portion is disposed on a surface portion of the film liquid crystal

device which has a planar cross-section. In contrast, as clearly shown in Fig. 7 of Kashawagi, the sealing material 3, and corresponding injection port, of the liquid crystal panel is disposed on curved surface portions of the substrates 1 (i.e., the sealing material 3 contacts the confronting inner curved main surfaces of the substrates 1).

Moreover, Kashiwagi does not disclose or describe the holding structure recited in claims 1 and 2. More specifically, claims 1 and 2 requires a holding structure having a first holding member and a second holding member for holding the film liquid crystal device in a curved state while the at least one second surface portion of the film liquid crystal device remains planar in cross-section and while the first holding member engages the engagement portions of the liquid crystal device. As recognized by the Examiner, no corresponding holding structure is disclosed or described by Kashiwagi.

Moreover, claim 2 further requires a connection terminal disposed on the at least one second surface portion for electrically connecting the film liquid crystal device to a circuit block. Stated otherwise, claim 2 requires that the connection terminal is disposed on a surface portion of the film liquid crystal device which has a planar cross-section. In contrast, as shown in Fig. 7 of Kashiwagi, the connection terminals (electrodes 2) are disposed on curved surface

portions of the substrates 1 (i.e., the electrodes 2 contact the confronting inner curved main surfaces of the substrates 1).

Amended independent claim 17 similarly patentably distinguishes from Kashiwagi. More specifically, claim 17 requires a film liquid crystal device having a first surface portion having a planar cross-section, an injection port formed in the first surface portion, and a sealing portion disposed on the first surface portion. No corresponding structure is disclosed or described by Kashiwagi as set forth above for amended independent claims 1 and 2.

Amended independent claim 17 further requires a second surface portion having a planar cross-section and a connection terminal disposed on the second surface portion. Kashiwagi does not disclose or describe a connection terminal disposed on a surface portion having a planar cross-section (i.e., the electrodes 2 in Kashiwagi contact the confronting inner curved main surfaces of the substrates 1) as set forth above for amended independent claim 1 and 2.

In the absence of the foregoing disclosure recited in amended independent claims 1, 2 and 17, anticipation cannot be found. See, e.g., W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) ("Anticipation requires the disclosure in a single prior art reference of each element of the claim under

consideration"); Continental Can Co. USA v. Monsanto Co., 20 USPQ2d 1746, 1748 (Fed. Cir. 1991) ("When more than one reference is required to establish unpatentability of the claimed invention anticipation under § 102 can not be found."); Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added) ("Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim").

Stated otherwise, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. This standard is clearly not satisfied by Kashiwagi for the reasons stated above. Furthermore, Kashiwagi does not suggest the claimed subject matter and, therefore, would not have motivated one skilled in the art to modify Kashiwagi's liquid crystal panel to arrive at the claimed invention.

Claims 3, 7, 10, 13 and 8, 11, 14 and 19 depend on and contain all of the limitations of amended independent claims 1, 2 and 17, respectively, and, therefore, distinguish from the reference at least in the same manner as claims 1, 2 and 17.

Moreover, there is a separate ground for patentability of dependent claims 3, 7, 8, 10, 11, 13, 14 and 19.

Claim 3 includes the additional limitation that the at least one second surface portion comprises at least two second surface portions having a planar cross-section in the curved state of the film liquid crystal device, the sealing portion being disposed on one of the at least two second surface portions. Claim 3 further requires that the portable information apparatus further comprises a connection terminal disposed on another of the at least two second surface portions for electrically connecting the film liquid crystal device to a circuit block. Kashiwagi does not disclose or suggest a film liquid crystal device having a sealing portion and a connection terminal disposed on respective surface portions having planar cross-sections as set forth above for amended independent claims 1, 2 and 17.

Claims 10, 11, 13, 14 and 7, 8, 19 are directed to the specific structure of the film liquid crystal device and the holding structure, respectively. No corresponding structure is disclosed or suggested by the prior art of record.

In view of the foregoing, applicant respectfully requests that the rejections of claims 1-3, 7, 8, 10, 11, 13, 14, 17, 19 and 20 under 35 U.S.C. §102(b) as being anticipated by Kashiwagi be withdrawn.

The amendments to the abstract and claims made herein do not raise new issues requiring further search and/or consideration. Instead, independent claims 1, 2, 17 have been amended to incorporate the subject matter of dependent claims 4, 5, 18, respectively, claims 7, 10 and 8, 11 have been amended to depend on claims 1 and 2, respectively, to conform to the foregoing amendment to claims 1-2, claims 1-3, 7, 8, 10, 11, 13, 14, 17, 20 have been amended to overcome the claim objections and indefiniteness rejection raised by the Examiner, claims 4-6, 9, 12, 15 and 18 have been canceled, and the previously submitted abstract has been replaced with a new abstract which more clearly reflects the invention to which the amended claims are directed, thereby placing the application in condition for allowance or otherwise materially reducing the issues which remain for appeal.

In view the foregoing amendments and discussion, the application is believed to be in allowable form. Accordingly, entry of this amendment and favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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October 13, 2004

Date